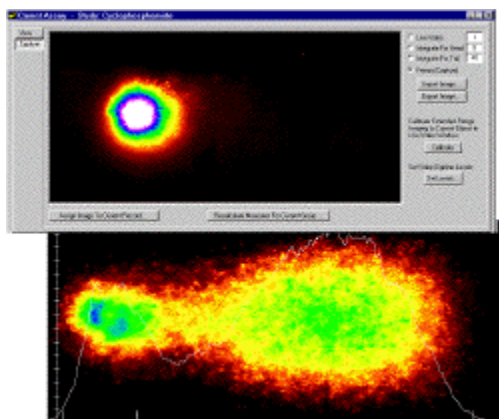


## Novel Toxicology Assay to Measure Contaminant Effects

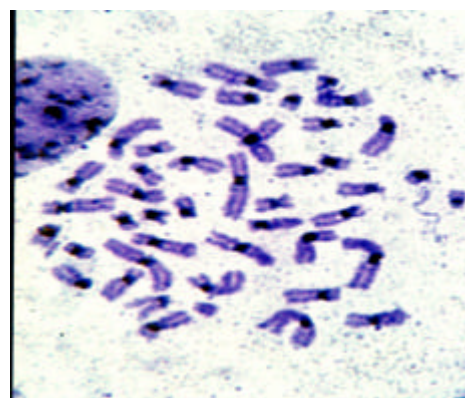
Researchers at the Naval Research Laboratory in collaboration with Loats Associates, Inc. (Westminster, MD) have developed a novel approach to examine the effects of contaminants on vertebrate and invertebrates in marine and estuarine waterways. Contaminants of particular type and concentration result in cellular damage at the chromosome level. Chromosomal damage can be lethal or cause any number of cancers or tumor growths.

The Comet Assay or single cell gel electrophoresis assay, provides a simple and effective method for evaluating DNA damage to cells caused by exposure to chemical agents.



The principle of the assay is based upon the ability of denaturing cleaved DNA fragments caused by chemical damage to migrate out of the cell under the influence of an electric potential, whereas

undamaged supercoiled DNA remains within the confines of the cell membrane when a current is applied. Evaluation of the DNA "comet" tail shape and migration pattern allows for assessment of DNA damage.



Whole blood cells isolated from brown bullhead catfish harvested from contaminated water systems are treated to hydrolyze DNA at sites of damage. Electrophoresis, and staining of the sample with a fluorescent DNA intercalating dye allows visualization under epifluorescence microscopy and damaged assessed by the Loats Associates Inc. Comet Assay analysis system and software.

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